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March 22, 1952

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



TV-Gunsight Aimer

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PSYCHOLOGY

Learn While Asleep

Group of students who hear Chinese words and English equivalents played by phonograph during sleep learn such words faster than if music played.

► YOU CAN learn Chinese while you are asleep, Dr. Bernard H. Fox and Joseph S. Robbin report in Washington.

They conclude this on the basis of an experiment conducted at George Washington University, which demonstrated that a recording of Chinese words and English equivalents, played to dreaming students between 2:30 a.m. and 3:00 a.m., helped them in their Chinese studies in the morning. Results are reported in the *JOURNAL OF EXPERIMENTAL PSYCHOLOGY*. (Jan.).

Thirty young men and women took part in the experiment. They were divided into three groups with equal ability in learning Chinese words. One group heard the Chinese words with English equivalents during sleep. The second group heard the same Chinese words but with mis-matched English words. The third group heard a recording of Strauss waltzes.

After waking up, the group that had heard the correct list of Chinese words learned the same list after an average of only 5.6 repetitions. The group who had

listened to Strauss required 7.7 repetitions. But the group that were mixed up by wrong English "equivalents" required 11.1 repeats.

Any who said they heard the machine or who woke up during the playing were eliminated from the experiment. The Chinese words, however, did make the listeners dream. One individual dreamed that she was on a street in China.

Records intended to teach you languages while you sleep have been widely advertised, but psychological experiments designed to test their value have had conflicting results. Some seemed to indicate some improvement after use of the records, but others indicated that groups taught during sleep did no better than those who slept the night through without any teaching.

In the George Washington experiment no comparison is reported between those who had the recording played to them during sleep and any others who may have stayed awake for the same period to study the Chinese words.

Science News Letter, March 22, 1952

MEDICINE

Smaller Artificial Kidney

► A NEW artificial kidney, smaller and simpler to operate than those now in use, has been developed by John R. Guarino and Louis J. Guarino of the Bruschi Medical Center, Cambridge, Mass., and the Pan-Engineering Company, New York.

The device is intended for routine use in small hospitals and clinics. Like big artificial kidneys, it operates to remove poisonous substances from the blood and keep life going while temporarily damaged and non-functioning kidneys can be repaired or recover by themselves from the damage.

Patients brought to small, local hospitals with bichloride of mercury or barbiturate sleeping pill poisoning might be helped by this device, it is suggested.

In the older, large artificial kidneys, the patient's blood is run through many feet of cellophane tubing. The tubing is immersed in a bath of salt solution. The poisonous substances in the blood diffuse out into this fluid and the blood is returned to the body.

The new, small artificial kidney works on the same principle, but the salty fluid is carried in the cellophane tubing while the blood enters and leaves a silicone-coated glass chamber. The cellophane tubing containing the salty fluid is in this chamber.

Among advantages claimed for the new apparatus are: small size with simplicity of construction and operation; requirement of a small amount of blood for a large dialyzing surface area; elimination of blood pumps, machinery and air traps; no opportunity for reabsorption by the blood of toxic material diffused from it into the fluid in the tubing; and elimination of such problems as blood circulation, clotting, hemorrhage, sterility and reactions.

Details of the apparatus and its use in dogs are reported in the *JOURNAL OF SCIENCE* (March 14).

Science News Letter, March 22, 1952

MEDICINE

Viruses Cause Suicide Of Red Blood Cells

► RED BLOOD cells are made to commit suicide by the action of certain viruses, Dr. Sylvan E. Moolten and Ellen Clark of St. Peter's General Hospital, New Brunswick, N. J., report to the New York Academy of Sciences.

The result in the patient is the kind of anemia known as hemolytic. The viruses, according to the theory of the New Bruns-

wick scientists, change the structure of the red blood cells in such a way that the red cells act as a foreign protein substance in the body. They provoke development of antibodies to themselves, just as the body develops antibodies to fight disease germs. In the case of the changed red cells, the response of antibody formation results in clumping and destruction of the red blood cells.

As a result of correlating hemolytic anemia with clumping of red blood cells, Dr. Moolten has been able to develop a rapid diagnostic test for identification of virus infection of the blood stream.

Science News Letter, March 22, 1952

GENETICS

Problem Dogs Help Understand Neurotics

► THE PART that heredity plays in producing neurotics and misfits in society is being sought in research at the dog colony at the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Me., by Dr. John L. Fuller.

"Problem" dogs, all raised under identical conditions, are being studied to find out just what inborn differences have contributed to their behavior.

The dogs were picked as "maladjusted" if it was necessary to remove them from their group to prevent serious injury or death, or if the animal was unable to learn the beginnings of two tests easily learned by 90% of the other dogs.

The behavior of these dogs in a variety of situations showed that dogs, like men, may be maladjusted in one situation and normal in another.

Different breeds of dogs were found to differ greatly in their general adjustment.

Science News Letter, March 22, 1952

MEDICINE

Life Most Risky On Day of Birth

► THE FIRST day of life is the most dangerous, it appears from figures worked out by statisticians of the Metropolitan Life Insurance Company, New York.

"If the number of deaths on the day of birth were to continue for the first 100 days, no infant would survive beyond that time," the statisticians report.

One-third of all deaths in the first year of life happen on the day of birth. Three-fifths of the infant deaths occur during the first week. About 78,000 babies die each year in the United States before living to the second month of life. This is well over twice the number that die during the remaining eleven months of infancy.

Premature birth is the largest single factor accounting for deaths of babies under one month of age.

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METEOROLOGY

"Brains" Forecast Weather

"Numerical forecasting" method being tried out at Institute for Advanced Study. Predictions made by speedy electronic computers.

► A REVOLUTIONARY method of predicting the weather is being tried out at the Institute for Advanced Study in Princeton, N. J., SCIENCE SERVICE learned through U. S. Weather Bureau sources.

The method is now made practicable through the development of giant electronic "brains" which can compute all the millions of multiplications and divisions necessary to it. It is called "numerical forecasting."

In numerical forecasting, the electronic computer is given a great many pieces of information describing the flow pattern of the current weather situation. Through the use of mathematical formulas, the machine then comes up with a prediction of what the weather will be one hour from now.

The process then starts all over again, on the basis of this prediction. It is repeated, until, by one-hour jumps, the machine comes up with a series of figures describing what the weather will be like 24 hours from now.

Numerical forecasters—so far there are only a few—see two advantages over present methods of forecasting the weather. First, a human forecaster can only use general, overall information about the weather on which to base his prediction. He could not possibly assimilate the great mass of detailed information about current weather conditions which is fed into the electronic brain.

Second, the human forecaster cannot use the step by step, hour by hour method. He jumps all at once into the future, 24 to 36 hours from now. However, it is evident that it is much easier to predict the weather one hour from now than a day from now. Numerical forecasters believe that, through the use of the step by step method, more accurate forecasts will result.

Until now, it has taken even the electronic brains a full 24 hours to work out the forecast for 24 hours from now. Thus the scientists were only keeping pace with the weather.

However, a machine with a much larger capacity and a higher speed is being built at the Institute for Advanced Study and it is hoped to be able to work out the prediction, involving millions of separate multiplications and divisions, in one-half to one hour.

At present, numerical forecasters are working on the problem of forecasting winds and pressures at about 20,000 feet over the entire United States. This is a good weather indicator, but in the future they hope to predict other information.

The pioneers in this work are Dr. John von Neumann, director of the electronic

computer project of the Institute, Dr. Jules G. Charney, also of the Institute, and Dr. R. Fjortoft, on leave from the Meteorological Institute in Oslo, Norway.

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BOTANY

Spring Comes North, Heralded by Red Maples

► EXPERTS CAN predict quite accurately how far and how fast spring travels north by looking at certain trees, usually the red or silver maple or the hackberry.

With due allowance for altitude, nearness to large bodies of water and location in city or countryside, spring travels north at approximately 100 miles per week from early March through May.

Red maple is the most often used milestick because it is one of the few trees that grows all the way from Miami to Quebec and because it is one of the first to put forth its spring flowers. Sometimes, in fact,

its flowers are out in a premature warm spell, then die and drop in a following cold spell.

Usually the red maple leafs in February or early March in Florida, in early April in Virginia and Maryland and in early May in southern New York and northern Ohio. A difference of two weeks' growth can often be noted within a distance of 15 miles. Most often this is a direct effect of altitude.

Along the seashore, trees and shrubs will leaf earlier than inland, while those in the city will be somewhat ahead of the nearby countryside. Flowering of trees in the city is aided by reflected heat from buildings, streets and sidewalks, while near large bodies of water, the heat of the water helps to speed the growth process.

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BIOLOGY

Brazilian Frog Quacks Like Duck, Also Swarms

► A FROG that "quacks" like a duck has now been added to the zoological collection at the Smithsonian Institution. The new species, *Hyla similis*, is found particularly in the outskirts of Rio de Janeiro, Brazil, though its exact range is not known.

Dr. Doris M. Cochran, associate curator of reptiles and amphibians, reports that this frog has a habit of swarming and that on one occasion, hundreds were found in a single tree.

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DEVIL'S HOLE—This Nevada desert pool, 40 feet long, 15 feet wide and with a surface 30 feet below the surrounding desert, has been the home of a unique species since the end of the Ice Age. Now a unit of the Death Valley National Monument, the pool contains pupfish, or *Cyprinodon diabolis*. These tiny fish, of which only 50 to 150 are known, have the smallest range of any species of vertebrate animals.

PHYSICS

Cosmic Rays for Altimeter

► COSMIC RAYS and Geiger tubes have been combined in a new altimeter to tell pilots what their altitudes are when conventional altimeters become unreliable in the thin upper-atmosphere.

Designed by John W. B. Barghausen of the Applied Physics Laboratory at Johns Hopkins University, Silver Spring, Md., and Dr. James A. Van Allen, formerly of the Laboratory and now at the State University of Iowa, the instrument uses two layers of five Geiger tubes each. The layers are separated by a lead shield.

Cosmic rays which regularly shoot through the earth's atmosphere strike one layer of Geiger tubes, activate them, pass through the lead shield and activate the second layer of Geiger tubes. When both sets of Geiger tubes are thus energized, an electric impulse is sent by wire to a voltmeter calibrated in feet of altitude.

The lead shield was included to eliminate low-intensity cosmic rays which filter

through the atmosphere, but which are unreliable as an altitude indicator.

When a weak ray strikes the top layer of tubes, it energizes them, but the lead shield prevents it from hitting the lower set of tubes. The instrument sends electrical impulses only if both sets of tubes are activated.

As the aircraft climbs higher, the number of cosmic rays striking the Geiger tubes increases. The meter registers a correspondingly higher altitude.

The Geiger-tube altimeter was designed especially for aircraft which fly three or more miles above the ground. Conventional aneroid-type altimeters become unreliable at those altitudes because changes in air pressure are small for corresponding changes in height.

It is estimated the new altimeter will be not more than 1,000 feet off at a height of 30 miles above the ground.

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GENETICS

Lethal Gene Discovered

► A LETHAL gene that affects the sex ratio, resulting in two females for every male born to a stock of mice, has been discovered by Dr. Theodore S. Hauschka of Lankenau Hospital Research Institute and Institute for Cancer Research in Philadelphia.

The lethal gene in this strain of mice kills one-half the unborn males when the mother carries the gene as a recessive on one of her two X-chromosomes.

Dr. Hauschka's discovery marks the first time a lethal gene has been identified in the chromosome which determines the sex of a mouse. His primary interest is in genes

which may influence the development of cancer.

So far, he reports to the American Cancer Society, he has found that mouse cancer cells with extra sets of chromosomes and genes can be transplanted readily to unrelated stocks of mice, while tumors with normal chromosome complements grew only in the inbred strains in which they originated. In these experiments he uses cancer cells which grow as free cell suspensions in a body fluid.

Next step will be to determine whether the degree of host-specificity in several types of cancer depends upon the cells' lacking

certain chromosomes or containing additional sets.

The possible relationship between genic imbalance in the malignant cell and the body's defense reaction is considered a challenging question. Normally, when protein from one species is injected into an animal of another species, the inoculated animal produces antibodies which neutralize the foreign protein. Why this does not occur when cells with unbalanced sets of chromosomes are injected will, it is hoped, throw some light on mechanisms of immunity to cancer.

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Question Box

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PSYCHOLOGY

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ELECTRONICS

Need TV Antenna Change

Ultra-high frequency television signals not received clearly on most antennas used for today's TV. Another System would probably have to be installed.

► MOST TELEVISION antennas now being used will not be satisfactory for receiving ultra-high frequency television signals, E. O. Johnson and J. D. Callaghan of the Radio Corporation of America reported to the Institute of Radio Engineers meeting in New York.

That is because present-day antennas would have poor directional selectivity at the high frequencies, meaning that many unwanted signals would be picked up and would spatter screens with specks of television static.

Ghost images as well as other undesired signals could not be reduced or eliminated with antennas having such poor directional characteristics, the two men reported. Furthermore, because ultra-high frequencies are shorter in wavelength than conventional very-high frequencies, the ability of conventional antennas to use the received signals would be poor.

That means television watchers probably will have to install another antenna system and obtain some sort of a frequency converter unit for satisfactory reception of future ultra-high frequency television stations on present-day sets.

Because line-of-sight transmission is much more critical for ultra-high TV signals than for conventional VHF signals, and because reflection and signal-absorbing problems will be greater for UHF television, four special antennas were recommended for receiving those high frequencies.

First, the UHF broad-band triangular dipole, called "the butterfly" or the "bow-tie," will give good service in strong signal areas. It looks like two triangles which have their tops facing each other. The antenna supporting rod goes through the point where the two tops meet.

Second, the dual-V antenna, for areas of medium signal intensity. It looks like a hollowed-out diamond such as is printed on playing cards.

Third, the corner reflector, which is especially adept at ridding TV screens of unwanted ghosts. It looks like a rod having a fluorescent light reflector behind it, and is good for areas of weak signal strength.

Fourth, the Yagi antenna, which also is good for areas of low signal strength, and has good directional characteristics. It looks like a ship's mast having four crossarms of different lengths, the whole business lying in a plane parallel to the ground.

Meanwhile, at least one television manufacturing company has scheduled a commercial "UHF package" which will provide

video viewers with the appropriate UHF antenna, plus a converter which will allow present-day sets to receive programs transmitted on the ultra-high frequencies. The package should be available in October.

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ASTRONOMY

Nova Explodes In Southern Sky

► A NEW star has blazed forth in the southern sky. Too faint to be seen without a small telescope, this ninth magnitude nova is in the constellation of Scorpius, the scorpion, and is near its tail.

The new exploding star was spotted by Dr. Guillermo Haro, director of the National Astrophysical Observatory, Tonantzintla, Puebla, Mexico, who late last month discovered a "new star" in the constellation of Sagittarius, the archer. Last year Dr. Haro

found three novae in Scorpius, and in 1950 he spotted one in Scorpius and one in Hydra, the water monster.

For people in the southern part of the United States the nova is an early morning star; observers in the central part of the country must look for it close to the horizon. News of its discovery has just reached Harvard College Observatory, Cambridge, Mass., clearing house for astronomical information in the western hemisphere.

The nova reached maximum brightness on March 2. The star was not shown on a photograph of that region of the heavens taken Feb. 29 even though it included stars as faint as 13th magnitude. Thus the star at maximum was at least 40 times as bright as normal and possibly several hundred times as bright or even more.

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METEOROLOGY

Cooler Spring Expected for Eastern Seaboard and West

► THE WEST, beyond the Continental Divide, and the East, along the Atlantic seaboard, can expect a cooler spring than normal. And most of the nation should expect more rain than usual.

This is indicated in the U. S. Weather Bureau's extended forecast for the period until the middle of April.

Warmer than usual weather is expected in the states bordering the Gulf of Mexico. In other areas, about normal temperatures are indicated.

Regions not expected to have more than normal amounts of rain—only about as much as usual—are: The Great Lakes region, the South Atlantic states, the Rocky Mountain states, and Texas.

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NATURAL RESOURCES

Oil and Gas Reserves Hit All-Time Peak During '51

► AMERICA'S KNOWN reserves of liquid petroleum were increased by 2.7 billion barrels during the past year, the American Petroleum Institute and the American Gas Association announced here today. Natural gas known reserves were raised by 8.2 trillion cubic feet.

Furthermore, the reserves were strengthened despite a record-breaking production of petroleum and natural gas for industrial purposes.

The net increase of 2.7 billion barrels in proved liquid-petroleum reserves is the greatest one-year addition in history. It brings petroleum reserves to an all-time high of 32.2 billion barrels.

The net increase of 8.2 trillion cubic feet in natural gas reserves raised those reserves to 193.8 trillion cubic feet.

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AIRCRAFT HEARING — Testing how U. S. Air Force Capt. Jack C. Green would hear if he were actually in a plane is Maj. Elizabeth Guild, an otolaryngologist at the U. S. Air Force School of Aviation Medicine. Such tests have shown that many pilots actually do hear well under flight conditions, though they may have slight difficulty with low sounds in a quiet room.

● RADIO

Saturday, March 29, 1952, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. M. H. Trytten, director of the Office of Scientific Personnel of the National Research Council, and A. C. Monteith, vice-president of Westinghouse Electric Corporation, discuss "Scientific Manpower."

OPTICS

Gunsight Proves Good for Centering TV Action Shots

See Front Cover

► A MILITARY gunsight has been found to be the television cameraman's best bet for fast pin-pointing in rapid action shots.

Known as the polaroid optical ring sight, the finder looks like an ordinary polaroid camera filter. But when the cameraman looks through it, he sees a pattern of concentric circles "projected" on the scene, such as shown on the cover of this week's SCIENCE NEWS LETTER.

Once lined up with the camera, the sight is accurate, and the cameraman does not have to line up his eye with the sight, for anything he sees inside the center ring will be accurately centered on the television screen.

The sight was developed for anti-aircraft gunnery. It consists of a single glass-faced disk so constructed that a set of concentric rings appears at target distance in the field of view, and no lighting or other accessories are needed.

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ELECTRONICS

Deflecting System Developed for TV Tubes

► AN ELECTRON deflecting system which simplifies television tube construction was described to the Institute of Radio Engineers meeting in New York.

Consisting of interleaved metallic patterns deposited on the inside of a hollow rectangular box by photo-engraving and electroplating means, the unit has only four terminals and does the same job as conventional deflecting elements in present-day use.

Conventional deflecting plates, two pairs of them, have presented problems to manufacturers. One pair of plates must be aligned and mounted horizontally; the other, vertically. They must be suitably shockproofed.

Because the electrostatic fields of the two pairs of plates interact with each other, they must be situated far apart in the tube's neck. The new system occupies only one-half the space filled by conventional electrostatic deflecting apparatus.

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BIOPHYSICS

Vision Process Duplicated

Chemical steps that make it possible for us to see have been duplicated in the laboratory. Only four substances necessary for this process.

► YOU SEE because light bleaches light-sensitive pigments in the retina of your eye. The chemical changes that result are accompanied by electrical variations in the retina. Conveyed to the brain by the optic nerve, these electrical signals are there translated into visual images.

The chemical steps that make vision possible have been duplicated in the laboratory by Dr. George Wald, of the Biological Laboratory of Harvard University and were described in Peoria, Ill., to the Bradley University Club of the Society of Sigma Xi, national society for the encouragement of scientific research. The lecture is being repeated by Dr. Wald at various other colleges and universities throughout the country.

When you step out onto a sunny street, light bleaches the pigment in your eye and you become used to the brightness—less sensitive to light. This is light adaptation. Then step into a darkened movie theater. At first you can see nothing. But the chemical changes in your eyes are reversed by darkness and gradually your eyes become more sensitive to the faint light. The color of the pigment is restored. This is dark adaptation.

Two kinds of cells exist in your eye's retina, each with its own distinctive pigment. The cone cells, which operate in daylight, have the violet pigment called iodopsin. The other type of cells, the rods, by which you see in the dim illumination at night have a red pigment, rhodopsin.

Only four chemicals were necessary for Dr. Wald to duplicate, in the laboratory, the process of light and dark adaptation. Important among the substances necessary to re-create both pigments is vitamin A; that is why nightblindness is one of the earliest symptoms of vitamin A deficiency.

But vitamin A exists in various forms, and not all forms will work in this visual cycle. The ordinary synthetic vitamin A will not do. The necessary form is that known to chemists as a cis-isomer. This form is present in liver oil.

In addition to vitamin A, the necessary chemicals for the rhodopsin cycle are: cozymase, alcohol dehydrogenase and opsin. Opsin is the only one of these which must be obtained from the retina.

When light strikes the red rhodopsin, it is spontaneously bleached out into a yellow mixture of opsin and a carotenoid protein called retinene. The retinene, in the presence of the enzymes, alcohol dehydrogenase and cozymase, is changed to vitamin A.

In dark adaptation, vitamin A and opsin are changed back to rhodopsin. In the dark, and aided by the influx of additional vitamin A from the circulation and from certain cells of the eye, the opsin "traps" retinene, removing it to form rhodopsin. What happens, therefore, is that the vitamin A is re-converted to retinene by oxidation in the presence of the enzyme and then the retinene is condensed with opsin to form rhodopsin.

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PSYCHOLOGY

Study Cur Dogs for Light on Man's Heredity

► THE DESPISED cur dog can tell man something about his own hereditary past and future. Scientific study of hybrid dogs is suggested by Dr. William T. James, of the University of Georgia, Athens.

"Man is largely a hybrid animal in which different types have been intermingled," he told a meeting of the New York Academy of Sciences section of psychology.

Different breeds of dogs differ greatly in behavior pattern. Hybrid animals are likely to be well balanced between the extremes. Greatest range of individual differences in emotion and behavior is found among the hybrids. And so is the greatest variation in physical form.

Some breeds are much more active and alert than others. In one series of experiments, a signal was given the dogs for a five-second period and then the signal was accompanied by an electric shock applied to the right front leg during the following five seconds. The dog could avoid the shock by lifting his leg at the proper time. The active and excitable dogs soon caught on and were careful to avoid the shock. They lifted the leg promptly and held it up until the signal stopped. Inactive dogs either do not lift the leg in time or fail to hold it up long enough and so are shocked.

Differences were also found between the different breeds in energy, tolerance of frustration, emotionality and aggressiveness or timidity.

Emotional disturbance may help or hinder learning, it was found. Some animals are so disturbed by the procedure that they cannot be trained. Others are undisturbed and learn quickly. But still others are unemotional and yet are unable to learn what to do.

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ROCKET FUELER—To save time in fueling rockets, Republic Aviation Corporation developed the first mobile rocket engine servicing truck that carries the two propellants and pressurizing gas required for rocket propulsion. Here one of the liquid oxygen lines is being "bled" before being attached to the engine tank, while the ground is sprayed with water to reduce fire danger.

AERONAUTICS

Around World in 60 Hours

Special weather forecasting and reporting problems are presented by speedy British jet airliner that will make the fast trip around the earth.

► YOU MAY soon be able to travel around the world in 60 hours, including 10 or 11 stopovers of not more than 25 minutes, on regularly scheduled airlines.

A new version of the British jet airliner, the Comet I, is in preparation which will fly halfway around the world from London to Sydney, Australia, in 30 hours total time, A. C. Campbell Orde, operations development director of the British Overseas Airways Corporation, revealed at a meeting at the U. S. Weather Bureau in Washington. Plans are also underway to extend the route both from Sydney and London to America.

Mr. Campbell Orde was at the Weather Bureau to discuss the special weather forecasting and reporting problems in flying commercial airliners twice as high and twice as fast as they are flown now.

The first leg of the journey around the world—from London to Cairo—will go into passenger operation early in May. After that, the Comet I will extend its service to Karachi, Calcutta, Singapore, Darwin and Sydney. The Comet I will do this in 36

hours, as compared with the present time of 48 hours for "old-fashioned" propeller-driven planes, and with 30 hours for its upcoming successor.

After that the route will be extended from Sydney to the Fiji Islands, then Honolulu and either San Francisco or Vancouver, British Columbia. Meantime, flights from London to New York will be added and then the final link across North America will complete the globe girdling in 60 hours.

Two things will make possible keeping stops down to 25 minutes. First, the British have developed a method of pressure-feeding 50,000 pounds of kerosene to the Comet I in that length of time. Second, meteorological information and other data necessary to make a flight plan will be speeded up so that the pilot can make his plan in 25 minutes.

Also present at the meeting were Dr. F. W. Reichelderfer, chief of the Weather Bureau, and Maj. Gen. Oscar Senter, head of the U.S. Air Force's Air Weather Service.

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MEDICINE

Cut Down Calories To Prevent Cancer

► CUTTING DOWN on calories as a way of preventing cancer death was suggested in a report by Dr. Albert Tannenbaum of Chicago at the Second National Cancer Conference in Cincinnati.

The frequency with which cancer attacks mice is reduced as the calories in the diet of the mice are reduced.

These findings in animals, Dr. Tannenbaum said, are all the more striking because they agree with insurance figures which indicate that cancer mortality in man is related to body weight. The insurance studies, with a few clinical studies, "suggest," he said, "that at least for some tumor types overeating and overweight exert a promoting influence."

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ARCHAEOLOGY

Legal Papers in Cookie Jar—Jeremiah 32:14

► THE ANCIENT people of Israel may not have kept their housekeeping money in the teapot or in a clay piggy-bank, but they did keep important legal documents and manuscripts in what looked like a cookie jar.

One of these jars has been received at the Oriental Institute of the University of Chicago. It had been put together like a jig-saw puzzle from over 100 fragments found in the Dead Sea Scroll Cave. The job of assembling the bits was done at the Palestine Archaeological Museum.

The jar was made of a reddish clay, the color still showing at the edges of the fragments. Slightly bulging ridges show where the potter's hand added fresh masses of soft clay in building up the jar.

Mention of the custom of putting legal documents in jars occurs in the Bible, Jeremiah 32:14, where the prophet charges Baruch, "Take these deeds, this deed of purchase which is sealed and this deed which is open and put them in an earthen vessel that they may continue many days."

Description of the jar is reported to the American Schools of Oriental Research by Dr. Carl H. Kraeling.

Science News Letter, March 22, 1952

TECHNOLOGY

Muffins Won't Stick To Plastic-Coated Tin

► A MUFFIN tin to which muffins and cakes will never stick was exhibited at the National Plastics Exposition in Philadelphia. The pan need not be greased because it is coated with a waxy plastic, a fluorocethylene resin which Du Pont handles under the trade name of Teflon. This non-stick utensil is not yet commercially available.

Science News Letter, March 22, 1952

MEDICINE

View Gall Bladders With Iodine Chemical

► A NEW chemical for making gall bladders visible in X-ray pictures has been giving good results in preliminary trials at the Johns Hopkins Hospital, Baltimore, Md.

The compound contains about 67% by weight of iodine and like others used for this purpose, it is taken by mouth.

When tried on 100 patients, it enabled the doctor to see the gall bladder in 93. It was 35% more opaque than other materials used heretofore.

"This constitutes an improvement of considerable significance," Drs. Russell H. Morgan and Hal B. Stewart state in their report to fellow radiologists through the technical journal, *RADIOLOGY*.

The compound will be marketed under the trade name, Telepaque, by Winthrop-Stearns Company.

Less nausea or other distress and far less need for a second dose to get satisfactory X-ray views of the gall bladder are other advantages for the drug found by the Johns Hopkins doctors.

Science News Letter, March 22, 1952

HORTICULTURE

New Garden Lettuce and Cockscomb Seeds Available

► NEW GARDEN lettuce, loose-leaf and heat-resisting, is the most promising lettuce developed to date. Seeds of this Salad Bowl lettuce, the first lettuce ever to win the All-America Selections' gold medal, are now available.

Seed of Mandarin Chinese cabbage, the first domestic dwarf type of Chinese cabbage, and Celosia Pampas Plume, a tall feathered cockscomb with a large, luxurious plumed spike, are also available this spring for the first time. Dianthus Double Gaiety with frilled and twisted petals is considered by some the finest pink available today.

These two vegetables and flowers are plants your neighbors are not likely to have. All contained in the 1952 seed kit, they can be secured through SCIENCE SERVICE.

Salad Bowl lettuce, developed by the U. S. Department of Agriculture, has a dozen well-known ancestors. Some belong to the head variety of lettuce, some are loose leaf and a few are Romaine or Cos.

Ancestors grown in home gardens today are New York, which often weighs two pounds; Iceberg, which produces a small, tight head; Grand Rapids and Paris White. Slobolt gives the new lettuce its great ability to withstand heat. A California variety known as Australian contributed the peculiar leaf formation, making the lettuce resemble endive.

Mandarin Chinese cabbage is the first dwarf variety to be developed especially

for U. S. soil and climate. Tasting like a cross between cabbage and lettuce, this garden green makes delicious coleslaw, can be cooked like asparagus and is a novel base for salad late in the season after fresh lettuce is no longer available.

The lovely new plumed cockscomb being introduced this year likes the hottest possible weather. The plant makes an attractive border for the garden and the flowers keep beautifully when cut. A brand new variety for 1952, Celosia Pampas Plume comes in a colorful collection of coppers, bronzes, reds and golds.

Seeds of the Salad Bowl lettuce, Mandarin Chinese cabbage, Celosia Pampas Plume and Dianthus Double Gaiety have been collected for you by Science Service. These four are available for the nominal sum of 75 cents in the current unit of monthly "THINGS of science" service. Grow them yourself to see how excellent they are. Just write Science Service, 1719 N. St., N. W., Washington 6, D. C., and ask for the 1952 seed kit.

Science News Letter, March 22, 1952

NUTRITION

Sorbitol Ice Cream Tried for Diabetics

► BETTER TASTING ice cream for diabetics may result from a mix made with sorbitol, a sweet tasting food alcohol. The mix was developed at the University of California College of Agriculture at Davis under the direction of dairy industry specialist B. E. Hubbell, Jr.

The problem in making ice cream for diabetics has been to remove the sugar solids without changing the freezing point of the ice cream. Sorbitol, besides lending sweetening to the ice cream, lowers the freezing point of the mix so that a normal body and texture of ice cream results. The chemical, though sweet, is not readily used as a sugar in the body.

The university's diabetic ice cream mix has now been released in small quantities for test purposes to some local manufacturers.

Science News Letter, March 22, 1952

TECHNOLOGY

Switch to Bottled Gas When Pressure Drops

► A DUAL-FUEL heating system designed to keep houses and office buildings warm when the gas pressure drops has been developed, tested and found satisfactory, the Gas Appliance Manufacturers Association announced in New York.

An outdoor thermostat automatically switches the heating system from natural to bottled gas when the temperature falls below a specified point. That helps keep the gas pressure up in utility mains during cold snaps when gas demand is high.

Science News Letter, March 22, 1952

IN SCIENCE

PSYCHOLOGY

Off-Center Words Easier To Recognize, Tests Show

► YOU CAN recognize an English word that you are not looking directly at better if it is off to the right than if it appears in some other direction.

Readers of Yiddish, on the other hand, recognize off-center words if they are off to the left.

This was revealed by experiments at McGill University, Montreal, Can. The explanation is suggested by the experimenters, Drs. Mortimer Mishin and Donald G. Forgy in the *JOURNAL OF EXPERIMENTAL PSYCHOLOGY* (Jan.).

When you are reading English, the center of your eye is fixed on one word, but meantime the tail of your eye is constantly looking ahead to the word next on the right. This gives special training in recognition to visual cells on the right of the eye's retina and corresponding training to the left side of the brain.

In reading Yiddish, which is read from right to left, it is the left side of the eye which gets the special training and the right side of the brain.

Other possible explanations were ruled out by further experiments. Among them were suggestions that the first part of the word is more important in recognition and the beginning of a word appearing from the right is closer to the center of the eye than the beginning of a word on the left.

Science News Letter, March 22, 1952

PLANT PATHOLOGY

Insecticide, Aldrin, Hits Underground Plant Pests

► HIGHER YIELDS of certain food crops were predicted in Washington through use of the insecticide, aldrin. This new organic insecticide hits insects that infest the soil. It has just been certified by the U. S. Department of Agriculture for shipment in interstate commerce for specified uses.

Control of soil insects, whose damage is not easily spotted, is one of the most promising fields for agricultural progress. F. W. Hatch of Shell Chemical Corporation in New York explained at a press conference in Washington. The crops on which aldrin can now be used include peanuts, sugar beets, sugar cane and small grains. The insecticide kills rootworms, wireworms and white-grubs with smaller dosages than previously known treatments, thus saving money for the farmer and ultimately for the consumer.

Science News Letter, March 22, 1952

SCIENCE FIELDS

NATURAL RESOURCES

Sugar Wastes Stop Weeds Stealing Irrigation Water

► **WASTE PRODUCTS** from cane sugar refineries and potato-processing factories soon may be used to cut down an annual \$500,000 water bill run up for taxpayers by weeds growing next to western irrigation canals.

Announced by Dr. V. P. Sokoloff, a lecturer in geography at Johns Hopkins University, Baltimore, Md., the process uses a mixture of carbohydrates and nitrates to smother weed seeds before they start growing. Dr. Sokoloff, who developed the technique, said laboratory tests have been satisfactory. He predicted the solution would be useful when dirt banks are being packed just before concrete is poured on the walls of the new canals.

Although the process has not been tested in the field, Dr. Sokoloff said it should allow canal walls to be made much thinner because weed roots would not be there to thread their way through the concrete. Those roots, he estimated, absorb annually an amount of water valued at \$500,000.

Science News Letter, March 22, 1952

PSYCHOLOGY

Less Conflict With Less Belief in Equal Opportunity

► **THE NEGRO** or Jew who has faith in the "American Dream" of equal opportunity for all is worse off psychologically than those brought up to believe that they belong in a lower class.

This conclusion was reached by Dr. Gerhart Saenger, psychologist of New York University, after a study of a cross section of New York population.

"The stronger the belief of the minority in democratic ideals," he found, "and the more they tend to reject the belief in their own inferiority, the greater the amount of conflict engendered."

To maintain faith in equal opportunity in spite of the fact that actually they have fewer chances is a failure to face reality.

The way a minority group member behaves as a result of the discrimination against him depends on the extent and the severity of the discriminatory practices. Where discrimination is relatively light, he is likely to try to overcome it; he works harder, is more aggressive, more likely to protest. Where discrimination is more severe, the victim is likely to become resigned and apathetic and to lose ambition.

Race and religious or cultural prejudice is a vicious cycle, Dr. Saenger observed.

Discrimination makes the victim aggressive and self-seeking. Belief that minority members are aggressive leads to hostility by the majority that creates more aggression. If the victim is unable to retaliate, he takes it out on other groups, other members of his own group, or in hostility against himself.

Belief that the Negro is lazy and unintelligent makes the white man refuse him good jobs and educational opportunities. This in turn, makes the Negro lose ambition. He feels it is not worth while to study in school or to work hard.

Dr. Saenger reported his study to the New York Academy of Sciences.

Science News Letter, March 22, 1952

DENTISTRY

Instrument Holds Rat Still and Mouth Open

► **SODIUM FLUORIDE**, the chemical many communities are adding to their drinking water supply to help prevent tooth decay, will stop cavities that have already started when put on the cavities in the teeth of experimental animals.

This was discovered with the aid of a new instrument devised by Dr. Erling Johnansen, fellow in dentistry at the University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

The instrument, expected to open an entirely new field of dental research, has not yet been given a name. It makes possible microscopic examination and photography of the tiny teeth and other parts of live, unanesthetized animals such as rats, guinea pigs and hamsters. The instrument holds the animal still and holds its mouth open as it rests in the dentist's hand. It does not cause any pain to the animal, but its manipulation requires the development of a technique by its user. It is simple and inexpensive.

Science News Letter, March 22, 1952

PSYCHOLOGY

Childhood Memorizing Lasts Into Old Age Forgetfulness

► **MATERIAL THOROUGHLY** memorized in childhood is retained when the individual has reached the age of "forgetfulness." This was found by Dr. Madorah E. Smith, psychologist of Honolulu, when she heard a woman of 60 repeat the answers to the 107 questions of the Westminster Shorter Catechism.

The test was made more than 40 years after the woman had ceased to have even incidental practice. She repeated 53 answers perfectly and 39 more with only a word or two of prompting. This was only slightly less than she remembered at a previous test 16 years ago at the age of 44. Then she repeated 54 answers perfectly and 44 with very little prompting. Details of the study are reported in the *JOURNAL OF GENETIC PSYCHOLOGY* (Dec., 1951).

Science News Letter, March 22, 1952

TECHNOLOGY

Springy New Foam Resists Flame, Chemicals

► **A SPRINGY** new foam that resembles foam rubber, but resists flame and chemicals, has been produced by a new and economical method. It cures at low temperatures and costs about the same as foam rubber in fabricated form.

First the liquid destined to become a plastic is poured into a pressure cylinder. Gas under the low pressure of about 400 pounds expands it four to eight times its original size. The foamed liquid, which now looks like thick whipped cream, is poured into lightweight, open molds, where it settles evenly into every mold cavity. It is cured at 225 to 275 degrees Fahrenheit, available in an ordinary oven.

The springy foam makes an excellent cushion backing for furniture upholstery as it can be laminated to natural and synthetic fiber textiles, or plastic film and sheeting. It is easily molded into intricate shapes, and can be die cut to any shape or sliced as thin as 1/32 of an inch.

The new foam is a type of vinyl resin. The economical new method for producing it was developed by Dr. Edmund H. Schwencke of Elastomer Chemical Corporation, Nutley, N. J., together with Bakelite Company.

Science News Letter, March 22, 1952

INVENTION

Atomic Pile Simulated By Electrical Device

► **SOME OF** the response characteristics of an atomic pile have been electrically simulated in an invention which received patent number 2,587,919. The inventors are Henry A. Straus, Baltimore, and Persa R. Bell, Jr., and Forrest H. Murray, Oak Ridge, Tenn. They assigned their patent to the Atomic Energy Commission.

The most difficult and critical problem in operating a neutron reactor, or pile, the inventors said, is that of controlling the power level or neutron density so it does not grow to dangerous proportions.

In order to do this, the inventors have made an electrical device which has the same time-dependent response characteristics as a reactor. The voltage in the device varies with time in exactly the same manner as does the neutron density of a reactor. The device, the inventors claim, can be used for establishing procedures for start-up, shut-down and operation of a reactor, for training, for design and testing of servo systems, for studies of response of the reactor to unusual disturbances and for obtaining information as to power levels which would be attained should the reactor get out of control of the normal control equipment and be shut down by the emergency controls.

Science News Letter, March 22, 1952

ARCHAEOLOGY

Thousands of Sphinxes

Not just one, but many thousands of sphinxes throughout the ages have witnessed the strife of man. Ancient roads of Egypt were once lined with them.

By MARTHA G. MORROW

► THE SPHINX is a symbol of strength and mystery. As kingdoms changed, and civilizations rose and perished, the sphinx held sway over Egypt for thousands of years.

Today when another struggle for power is being enacted in the Land of the Nile, the sphinx endures.

Many thousands of sphinxes, not just one, throughout the ages have watched the strife of man. For while the Great Sphinx of Gizeh is the most renowned, and rightly so, other sphinxes by the score are found in all parts of the world.

No one knows just how many sphinxes there really are. But we do know that one Egyptain road was once lined with about a thousand. Sphinxes were carved in Greece, Assyria, Phoenicia and Persia as well as Egypt.

Symbol of royal power, cloaked by the Greeks with an aura of mystery, the sphinx is still one of the most exciting figures in the world. Archaeologists find it worth spending a lifetime to discover, study and understand.

The Great Sphinx of Gizeh, which for some five thousand years has watched the sun rise over the Nile valley, is perhaps the only one of these human-headed, lion-bodied statues that has never been completely hidden by sand and dirt and debris of the ages.

Carved from a promontory of rock which overlooked the royal city of Memphis, the Great Sphinx is the largest royal portrait ever made. The face, mutilated today, is 13 feet eight inches across. Although made in the distant past and its creation a mystery,

it is believed by many to portray Khafre, the king who built the second pyramid frequently pictured in the background.

Throughout the centuries sand has encroached in waves and ripples, hiding the temple below and the stone upon which the Sphinx lies, the paws extended in front of the statue, and sometimes all except the portrait-face of the Sphinx. But always lovers of this ancient figure have freed it.

Cleared Previously

Some 3,500 years ago, as in recent decades, the Great Sphinx was extricated from the sands. A Pharaoh of the XVIII Dynasty, Thothmes IV, had the sand cleared away and a system of mud-brick walls built around it to keep the encroaching sands at bay. A granite slab placed against the breast of the image proclaims his deed, and portions of the walls unearthed in recent years testify to its truth.

The monument was restored by Ramses II, by the Ptolemies and by the Romans, then once again the sands took over. But always the head remained free. The face was visible to travelers of the Middle Ages as to modern tourists.

The great statue has withstood the storms and wind-borne sands of thousands of years, but within the last dozen centuries man has helped destroy its comeliness. Worshipped and protected by the ancient Egyptians, the image was disfigured by the Moslems because images of every sort are forbidden by their religion. The Mamelukes used the great stone image for a rifle target.

Within the last century or two, however, French and Egyptian engineers alike, prompted by love of archaeology, hope of fabulous discoveries or desire to attract tourists, have carted away the sand. Beginning with an expedition sent by Napoleon, periodically the statue has raised its head higher and higher above the sand.

Once again the Great Sphinx is honored. Visitors come from all parts of the world to admire it. Modern tourists get a clear view of the animal, the partial pedestal hewn in the rock and temple beneath the paws.

But other kings of other ages also left their portraits for posterity. Carved of alabaster or granite, limestone or sandstone; formed of wood or pottery, gold or ivory—the sphinx for ages has stood as a symbol of royal wisdom and might.

Sphinxes, usually in pairs, stood guard over the entrance to temples and tombs just as the Great Sphinx watched over the

approach to the pyramids. Pairs of small ones held jars of ointment, an offering to the gods. Sometimes entire temple avenues were lined with pairs of sphinxes.

The Great Sphinx of Gizeh and others of that wonderful early period had not just a human face, but also a human head complete with human ears. During the Middle Kingdom, which flourished some four thousand years ago, only the face was human—the head and ears were lion-like as well as the body. The usual head-dress in these Hyksos sphinxes, a number of which have been found near Tanis, was replaced by a lion's mane. Some sphinxes were given human hands as well as human heads, and a few even had human arms.

As century after century of sphinx-creating passed, the thickset, muscular bodies of the earlier sphinxes were replaced by slender, graceful, cat-like forms. The ornaments became numerous and heavy, the over-decorated creatures being expected to balance tall and unsuitable crowns upon their heads. But even to the last the sphinx in Egypt remained a masterpiece.

Both Sides Lined

More than a thousand sphinxes once guarded the road that connected the temples of Karnak and Luxor. Some three thousand years ago Thebes was mistress of the Ancient World, and Karnak and Luxor within her borders. The temple of Karnak was regarded as the earthly palace of the god Amon, Amun or Amon-Ra, the temple of Luxor his southern home. The road connecting the two, like many other great avenues in Egypt, was lined on both sides with sphinxes.

In time, however, the capital of Egypt was moved to the Delta, and Thebes lost her political importance. The city was sacked by the Assyrians in the seventh century B. C. and later by the Persians. The temples were pillaged and the Avenue of Sphinxes became completely obliterated.

Fortunately for tourists today the last great king of ancient Egypt, Nectanebis I of the XXXth Dynasty, in the fourth century B. C. restored the Avenue of Sphinxes. The faces of the sphinxes which the visitor sees are carved in his image. They were probably made during his youth as the faces are those of a young man; some grin, some smile and one has an empty look.

By lucky chance, an inscription on one of the pedestals upon which the sphinxes lie enables us to visualize the Sacred Avenue as it was some two thousand three hundred years ago.

"Nectanebis," states this valuable inscription, "made a beautiful road for his father Amun, surrounded with walls, growing with



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TWO SPHINXES—Almost intact, two sphinxes are shown with Zakaria Bey Ghoneim, Egyptian responsible for their discovery. To date, ten human-headed sphinxes that once lined the avenue near Luxor have been unearthed.

trees and glittering with all kinds of flowers." What a marvelous avenue must have greeted those holy enough to be admitted.

Dozens Now Unearthed

But again the road fell into disuse, this time after the fall of the Pharaonic dynasties. By the end of the Roman epoch in the fourth century A. D., it had been completely covered by debris. A new town, which chiefly centered around the temple of Luxor, spread out over the site. Only a small part of the avenue near Karnak remained uncovered.

Buried through the centuries, the first of the statues at Luxor was located only a few years ago below a Roman pavement by Zakaria Bey Ghoneim, then Chief Inspector of Antiquities for Upper Egypt. He has since unearthed other statues near their original

positions along the avenue from Karnak to Luxor. Today ten human-headed sphinxes, four intact, line the avenue near Luxor.

Not the only avenue of Sphinxes in Egypt, nor even in Thebes, this is the only one still existing that is lined with man-headed sphinxes. Other sphinx-guarded avenues have been known for some time; this has just recently been uncovered.

Each statue, cut out of a single block of sandstone, is about ten feet long and four feet high. They stand some 13 feet apart. Each sphinx lies on a rectangular base set upon a four-foot sandstone pedestal. The heads of most are missing, but fragments found nearby may furnish a clue to how they looked.

The figures at the other end of the road, those guarding the approach to Karnak, have the body of a lion but the head of a ram. These, not recent discoveries, have been known for many years and some are beautifully preserved. Several dozen of these may be seen by the interested tourist. Just where the two types of sphinxes meet along the processional avenue is not yet known. But the exact route of this avenue has been worked out through land maps and aerial photographs, and checked by trial pits sunk in several places. Part of the avenue runs directly beneath the modern town of Luxor.

This spring Mr. Ghoneim hopes to return to unearth more of these guardians of the avenue. Some day the whole two miles of the avenue may be cleared. Then perhaps a full thousand of these symbolic creatures will again greet pilgrims to ancient Thebes.

Science News Letter, March 22, 1952

ANIMAL NUTRITION

Cats Have Sweet Tooth Like Other Animals

➤ ALL ANIMALS are sensitive to sweet-tasting food, Dr. Hubert W. Frings, entomologist at Pennsylvania State College, State College, Pa., has found from a study of animals ranging from snails to quail and rabbits to flies.

Dr. Frings has just investigated the charge that cats do not like sweets, a finding reported, he says, by a European scientist. It is false, he found. Tabby likes her sweets just as do dogs or rats or flies or children.

Twenty cats were tested in Dr. Frings' experiment. He offered them plain diluted milk and also the milk with sugar added. Each time they would take the sweet drink and leave the plain.

The European scientist was deceived, Dr. Frings believes, by the fact that the cat's sweet-sensitive taste organs are less numerous than the organs for other tastes.

Science News Letter, March 22, 1952

Television engineers have already proved the technical feasibility of a three-dimensional television system.



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Anemone

► "WINDFLOWER," the anemone has been called, and it is a really appropriate name.

For all the species of this genus do not mind being pulled at by the breeze and some of them grow boldly on the open hillsides of the prairies, where the skies of April and May are more often open-windowed than not. Whoever has seen a mass of these flowers, blue or white, tossing in the wind, will grant that they have been very well named.

It is frequently stated that the name anemone is a corruption of the Greek pneumos, meaning breath or wind, but this is not the case. According to Gray's Manual, the standard botanical authority, it is an

attempt at the Latinization of Na'man, which is the Semitic name for Adonis.

Adonis was a mortal youth who died tragically because of his love for the goddess Venus, and from his blood the crimson-splashed anemone of the Orient is said to have sprung.

Anemones are widely scattered, all around the world, but mostly in the lands where the wind blows free. Our most abundant species is a foot- or two-foot high, rough-leaved, white-flowered plant that grows in great masses in moist soil. It is frequently found forming long swaths along the foot of a railroad right-of-way.

Then there is a smaller, more delicate, enamel-blue-flowered anemone, that grows in the woods and is in bloom in May.

A third, one of the oddest of all anemones, has gained the nickname of "old man's whiskers" because of the long, silky mass of hairs that surrounds the ripening fruits after the flower has faded.

Although anemones are the wind-flowers of the woods and mountains, the sea also has its anemones. They are just as beautiful as the land flowers, but they are animals, not plants, and they are found along the edge of the ocean in all parts of the world.

If you look carefully in cool, shaded places where the water rarely leaves, you will have no difficulty finding anemones along the coasts of this country. The animal is little more than sea water itself, yet when fully expanded, with a high column and crown of tentacles, it is a lovely spectacle.

As anemones sway in the wind, so the "flowers of the sea" sway with the water currents of the ocean.

Science News Letter, March 22, 1952

PLANT PATHOLOGY

Aid Fight Against Insects

► THE VIRUSES, the bacteria and the fungi, organisms that produce disease, may eventually prove to be among the farmer's best allies in his fight against insect pests.

Curtis P. Clausen, chairman of the division of biological control of the University of California Experiment Station in Riverside, points out that we are now at the same stage with viruses, bacteria and fungi as we were with insect parasites and predators 40 years ago.

There have been only two instances of successful utilization of micro-organisms in field control of insect pests.

The milky disease of Japanese beetle grubs, caused by bacteria, is now widely used in eastern states to control the pest. Spore dusts applied to the soil in infested areas result consistently in reduction of grubs within a year to numbers below the injury level. The second example is field control of alfalfa caterpillar. Under direction of Edward A. Steinhaus, associate insect pathologist of the University of California at

PSYCHIATRY

Pre-Delinquency Danger
Signs Listed by Psychiatrist

► IS YOUR son or daughter bored, moody, inattentive, overactive or excitable? Does he lie flagrantly? Is he failing in school?

If so, ask for expert advice right away.

These are the danger signs pointing to later juvenile delinquency. The pre-delinquency list is provided by Dr. Robert V. Seliger, psychiatrist of the Neuropsychiatric Clinic, Baltimore, Md., in a report prepared for the National Committee on Alcohol Hygiene on "Delinquency in America." If your child has any home or school problem, he advises, take him at once to a community mental hygiene, school or hospital clinic.

Young people often embark on an "adventure in crime" as an antidote to loneliness, insecurity and unhappiness, Dr. Seliger said.

"Many cases of juvenile delinquency come from cultured homes of supposedly high standing," he said, "although careful study of these homes reveals a poor emotional climate, in which one finds bickering, contention and fussing of the parents, or a jealous, or indifferent, or belittling parent-to-parent relationship.

"In the history of delinquents we find a high percentage of parental difficulties, divorce, separation, broken homes, dependency and various types of emotional problems and illnesses. These difficulties may be partly due to poor economic conditions."

Science News Letter, March 22, 1952

INTERNAL BALLISTICS

Edited by Colonel F. R. W. Hunt

Prepared by an editorial panel headed by Colonel F. R. W. Hunt, this technical publication forms an exhaustive treatise on research in that branch of applied physics relating to the properties of propellants and the motion of the projectile in the gun. The more recent application of the term "internal ballistics" to include rocket-propulsion has been excluded. The book includes a 16-page bibliography and is doubly indexed. Four plates, numerous tables and text figures. \$12.00

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Science Service Activities



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SCIENCE SERVICE edits and publishes books, prepares articles, produces film strips and other visual aids. Its collection of photographs is extensive.

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A third of a million boys and girls join in this great national movement dedicated to the development of science talent and sponsored by SCIENCE SERVICE. About 15,000 clubs are organized in junior and senior high schools in every part of the United States and in 25 foreign countries to carry out hobbies, serious research and useful activities in science. Newspapers, museums, science teachers and professional scientists cooperate. Without charge, clubs are furnished with a handbook on science projects, lists of free and low cost material, cooperation on science fairs, and many other suggestions for effective activities.

SCIENCE TALENT SEARCH

The annual Science Talent Search for the Westinghouse Science Scholarships brings opportunity each year to students with special talent in science. In addition to the forty boys and girls who win five-day all-expense trips to the Nation's Capital and who compete for \$11,000 in Westinghouse Science Scholarships, many more win Honorable Mention—a recognition that helps them get scholarships to colleges, universities and technical schools seeking able students. The Science Talent Search is extended in 25 states by state Science Talent Searches. It is an answer to a challenge to make potential scientific talent available for important tasks. Real ability for creative research is rare, and within a few years, boys and girls now in high schools must be ready to take the lead in scientific research.

NATIONAL SCIENCE FAIR

Newspapers, cooperating with SCIENCE SERVICE, educators, scientific societies and industrialists, support local science fairs to which the public is invited. Secondary school students whose exhibits are judged best are selected to represent the cooperating newspaper's territory at the National Science Fair, conducted by Science Clubs of America. To each representative the solid gold and silver Finalist medal is awarded. Each has an opportunity to share in scientific equipment awards and partake in a 3-day scientific adventure. The third National Science Fair will culminate in Washington in May 1952.

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Books of the Week

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BUYING SWEATERS FOR THE FAMILY—Shirley Johnstone—U. S. Department of Agriculture, Home and Garden Bulletin No. 16, 16 p., illus., paper, free upon request to publisher, Office of Information, Washington 25, D. C. Tells you what to look for and what to beware of in buying a sweater.

CARNEGIE INSTITUTION OF WASHINGTON YEAR BOOK No. 50—Carnegie Institution of Washington, 260 p., illus., paper, \$1.00, cloth \$1.50. Reports of the many scientific researches conducted during the year ending June 30, 1951.

CHANGING ATTITUDES THROUGH SOCIAL CONTACT: An Experimental Study of a Housing Project—Leon Festinger and Harold H. Kelley—Institute for Social Research, (University of Michigan Press) 83 p., paper, \$1.50. Showing how the attitudes of neighbors toward each other is altered by community activities in which the group has a common interest.

THE COOPERATIVE MOVEMENT AND SOME OF ITS PROBLEMS—Paul Hubert Casselman—Philosophical Library, 178 p., \$3.00. A Canadian labor economist writes on consumers' cooperation.

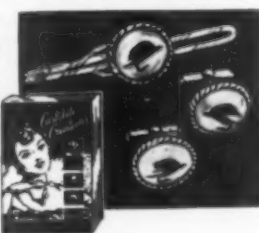
ELEMENTS OF THERMODYNAMICS AND STATISTICAL MECHANICS—E. O. Hercus—Melbourne University Press (Cambridge University Press), 153 p., illus., \$3.75. A concise text for physics majors.

AN EXPERIMENT IN ARCHITECTURAL EDUCATION THROUGH RESEARCH—Gordon McCutchan and William W. Caudill—Texas Engineering Experiment Station, 64 p., illus., paper, free upon request to publisher, Texas A. and M. College System, College Station, Texas. Describing an experiment in which students were allowed to think out new solutions to problems and to experiment with various possible solutions.

FOOD AND NUTRITION—E. W. H. Cruickshank—Williams & Wilkins, 2d ed., 443 p., illus., \$6.50. Revised and brought up to date in this second edition.

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MANOMETRIC METHODS AS APPLIED TO THE MEASUREMENT OF CELL RESPIRATION AND OTHER PROCESSES—Malcolm Dixon—Cambridge University Press, 3d ed., 167 p., illus., \$2.00. A laboratory handbook useful to workers without special physico-chemical knowledge.

NERVOUS DISORDERS AND RELIGION: A Study of Souls in the Making—John G. McKenzie—Allen and Unwin, 183 p., \$2.25. Lectures delivered at Manchester College, Oxford, by a psychologist from Scotland.

ONE LITTLE BOY—Dorothy W. Baruch—Julian Press, 242 p., \$3.50. Relating the intimate happenings in psychotherapeutic sessions with a child whose unhappiness had its outlet in asthma. They are a guide to parents in dealing with the needs of normal children.

THE OTHER CHILD: The Brain-Injured Child—Richard S. Lewis, Alfred A. Strauss and Laura E. Lehtinen—Grune & Stratton, 108 p., illus., \$2.50. A writer who is the father of a brain-injured child joins two specialists in presenting to parents this little book on how to care for their little one who is so different from all normal children.

POPULATION GROWTH IN MALAYA: An Analysis of Recent Trends—T. E. Smith—Royal Institute of International Affairs, 126 p., \$3.00. A study of wider relevance than Malaya because the major populations are Malaysian and Chinese and findings in Malaya may be an indication of population prospects of these people elsewhere.

POSTURE AND PAIN—Henry O. Kendall, Florence P. Kendall and Dorothy A. Boynton—Williams & Wilkins, 204 p., illus., \$7.00. Describing and illustrating postural faults associated with disabling and painful conditions and offering therapeutic procedures to remedy them.

PROFILE OF SCIENCE—Ritchie Calder—Allen and Unwin, 326 p., \$3.75. A British science writer tells the stories of four great modern discoveries as biographies of the men connected with them.

PROSPECTING FOR URANIUM—U. S. Atomic Energy Commission and the U. S. Geological Survey—Govt. Printing Office, rev. ed., 128 p., illus., paper, 45 cents. In case you plan to spend your summer vacation seeking your fortune by hunting uranium, here are valuable suggestions and data.

PROTECTION AND ELECTRODEPOSITION OF METALS—Department of Scientific and Industrial Research—HMSO, 350 p., illus., \$6.75. Reports of research carried on during the war by the Ministry of Supply and the Ministry of Aircraft Production and now made public for the first time.

SCIENCE AND HUMANISM: Physics in Our Time—Erwin Schroedinger—Cambridge University Press, 67 p., \$1.75. This outstanding physicist examines the question, "What is the value of scientific research?"

SCIENCE SERVING THE FINE ARTS—Robert L. Feller—Mellon Institute, 4 p., illus., paper, free upon request to publisher, 4400 Fifth

Ave., Pittsburgh 13, Pa. What scientists can contribute in the way of providing the best materials for artistic purposes, preventing deterioration and detecting frauds.

SHEEP DISEASES—I. E. Newson—Williams & Wilkins, 352 p., illus., \$7.00. In the past ten years, the number of sheep has dropped in practically all countries; in the United States as much as 25 per cent. Principal cause is disease.

SOCIAL EVOLUTION—V. Gordon Childe—Schuman, 184 p., \$3.00. A search for the evidence in the archaeological remains of ancient peoples for an orderly series of steps in the cultural practices of man on his way toward civilization.

SOIL DEVELOPMENT—Edward H. Faulkner—University of Oklahoma Press, 232 p., \$3.00. Describing the author's experiments in building his soil as he grows his crops without plowing and without fertilizer.

SOURCES OF LIGHTWEIGHT AGGREGATES IN COLORADO—Alfred L. Bush—Colorado Scientific Society, 365 p., illus., paper, \$1.50. Recently developed needs for lighter weight concrete prompted this study of sources of materials.

SUMMER AND AUTUMN FLOWERS—Constance Spry—Studio, 116 p., illus., \$5.00. A beautifully illustrated book on flower arrangements.

THOMAS JEFFERSON: SCIENTIST—Edwin T. Martin—Schuman, 289 p., illus., \$4.00. Jefferson, best known as a statesman, found time in his busy life to contribute importantly to a number of branches of science which he termed "my supreme delight."

TODAY'S SCIENCE AND YOU—Lynn Poole—McGraw-Hill, 208 p., illus., \$2.75. Highlights of the programs on the Johns Hopkins Science Review television show.

Science News Letter, March 22, 1952

INVENTION

Weather Instrument Tells Local Conditions

▶ A METEOROLOGICAL indicator for predicting local weather conditions won patent number 2,587,946 for Louvan E. Wood, Baltimore. He assigned his patent to the Bendix Aviation Corp. The device combines barometric pressure readings with specific humidity measurements.

Science News Letter, March 22, 1952

The Heavens Are Telling

THE STORY OF THE SKY, BY URANA CLARKE

A treasure house of easy-to-understand information for parents, their inquisitive children, and beginning astronomers. Simply and accurately this profusely illustrated book explains in non-technical terms the great mysteries of the heavens. Enlightening chapters on sun, moon, eclipses, planets, comets, meteors, constellations, time, tide, weather. Brief biographies of early astronomers. Sky charts and directions for a study of the sky every season of the year.

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MEDICINE

Hint Cancer Due to Emotional Upsets

► A HINT that one kind of cancer in women may be due to emotional upsets appeared in reports to the Second National Cancer Conference in Cincinnati.

The kind of cancer is one doctors refer to as "carcinoma in situ" or "preinvasive cancer" of the cervix or neck of the womb.

Nuns almost never have this kind of cancer although they do have cancers of other organs of the body, Dr. Fabien Gagnon of Laval University, Quebec City, Canada, reported. In one group of over 3,000 nuns studied over a period of 20 years, Dr. Gagnon found 130 cancers of other organs but none attacking the cervix.

But nuns apparently are not subject to the emotional upsets and consequent variety of disorders of body functions that affect other women in our civilization, Dr. H. F. Nieburgs of the Medical College of Georgia at Augusta, Ga., pointed out.

Carcinoma in situ is about six times as common in women in a mental institution as in women in the general population, Dr. Nieburgs has found. A routine screening of women prisoners showed about four times as much carcinoma in situ as in the general population.

While his studies are "far from being concluded," Dr. Nieburgs raised the question of the relation between emotional upsets and this kind of cancer.

Dr. Gagnon's opinion is that the lack of cancer of the cervix among nuns shows "very clearly" that chronic inflammation of the cervix is a basic cause for this kind of cancer. Nuns, he pointed out, are protected more even than unmarried women in the general population may be from conditions that could cause irritation and chronic inflammation of the neck of the womb.

If chronic inflammation of the cervix is a basic cause for cancer of the cervix, systematic treatment and cure of the inflammation, Dr. Gagnon pointed out, "is the most efficient protection against cancer of the cervix."

Science News Letter, March 22, 1952



NORMAN D. FORD
Founder and First President
of the Globe Trotters Club,
Leading U. S. Retirement
Consultant.

How Old Must a Man Be TO THINK of Retiring?

I learned that even today—with all prices going up—you don't have to be rich to retire young—
If you know just two things
by Norman D. Ford

Thousands of men sentence themselves to die before their time. They think they've got to keep on working for years more, just because they don't have enough money in the bank to retire now.

So they continue the rat race of commuting, they worry through sweltering summers and frigid winters. They keep up the fast pace of modern business. They drag themselves to work dead tired. So is it any wonder that heart disease is today's Number One Killer? That it kills thousands of men who could take life easy, get more fun of life, if they learn just two things?

The two secrets of retiring young

1. Learn where it costs less to live the kind of life you like, and
2. Where it is easier to add to your income through a part time job or small business.

If there is anything I have found out in traveling up and down this country, and in every corner of the nation from Maine to California, it is this: That it costs less to retire than you may think it does—provided you know where to retire.

I have found hundreds of undiscovered towns, islands, and bigger communities which are just ideal for the man or woman who wants to retire now and has only a small amount of money.

In these many little known towns in Florida, California, New England, the South, the Oklahoma and Missouri hills, Texas, Colorado, the Pacific Northwest, etc., the cost of living is surprisingly low and you can also find many opportunities to add to your income by seasonal work, part time jobs, or a part time business.

Will you retire young enough to enjoy it?

Because there are still many places where you can stretch your dollars and live comfortably and leisurely, you can take life easy a lot sooner than you think, perhaps even right now. Whether your hobby is fishing, hunting, boating, gardening, or just plain loafing, I can help you find the ideal place to retire. And once you retire and start living the kind of life you always wanted to, the chances are you will enjoy better health, need visit the doctor less often, and live longer.

So I say to you that you don't have to be old or rich to retire. You can retire now if only you know where to retire. And I've made it my business to tell people just where they can retire now.

Don't let inflation ruin your plans to retire

"Right now, as a result of reading your book," writes N. Humphreys from his small and attractive home on the west coast of Florida, "I am enjoying a wonderful retirement down here on just \$2 a day." Inflation has not stopped him from taking life easy.

Sooner or later you will want to be independent. You could spend hundreds of dollars just traveling around the country to find a retirement spot suitable to you and yet you probably won't learn as much as you can from reading Norman Ford's famous book. It's sold, too, with a money back guarantee if you're not satisfied. So today, before you forget, fill out the coupon below and mail to HARIAN PUBLICATIONS, 7 THIRD AVENUE, GREENLAWN, NEW YORK.

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A retirement counselor known to millions through his coast radio broadcasts, Mr. Ford constantly answers hundreds of letters like these from people who come to him for personal advice.

Where can I find a clean, friendly city with a climate that's mild and it's sunny the year around? My doctor says I must live at sea level. I like to play cards, grow flowers, fish. I must have reasonable living costs to go with this including a new 2-bedroom retirement home for less than \$700 down.

I want to buy a small retirement home in the country where I can sit by a log fire during the winter and experience that cozy feeling you can only know when there's a lot of snow outside. I can only pay \$3,500 for the 2-bedroom home I want. Where can I find my dream home?

Is it really true that you can buy a farm for only \$2,500? Where?

I'd like to open a filling station as a retirement business in a small Colorado community with good fishing nearby. Rents must be low. Where do you suggest?

I am always catching chills and colds and would like to retire in a warm, sunny state like California

or Florida, but I want to be near my daughter who lives in San Antonio, Texas. Can you help me?

Is it possible to buy a rural 5-room cottage on an acre of ground near the southern Gulf Coast of Florida for \$3,000?

I have always wanted to retire on the scenic coast of Oregon but do not want to live more than 100 miles from a large city like Portland. I have \$2,000 to put down on a small home? Can I do it, and if so, where?

Could you suggest a quiet, modest, and inexpensive sea-coast town with a good beach and fishing where I could retire within 100 miles of New York City?

Like the men and women who wrote these letters to Norman D. Ford, perhaps you want to retire but have no idea how to go about it or where to get information. If you consulted Mr. Ford in his office or by letter you'd spend \$25 to get his advice. But he has put all the facts that answer these typical questions and hundreds more besides in a wonderful book, "WHERE TO RETIRE ON A SMALL INCOME."

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• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 61d. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

✿ **AM RADIOS**, designed to share electrical circuits with television sets, now are being built into nine models of table and console television sets by one manufacturer at no additional cost. This allows the owner to get more enjoyment from one piece of electronic equipment. The built-in radio is five times stronger.

Science News Letter, March 22, 1952

✿ **DISPLAY SIGN** for stores, made of Vinylite plastic panels, moves on an electrically driven endless belt conveyor in front of lights at three to seven feet per minute. It is 14 to 36 inches high and from five to 50 feet long. Color advertisements can be printed on its panels.

Science News Letter, March 22, 1952

✿ **SWEATBAND**, which keeps spectacles and goggles clear, is feather-light. Made of cotton-backed gauze expanded to about eight times its normal thickness, the band may be washed and used repeatedly. Good for "hot-spot" workers.

Science News Letter, March 22, 1952

✿ **MERCURY LAMPS** with built-in reflectors have been designed to eliminate cleaning and other maintenance costs in industrial plants where dust films collect. Available in a 400-watt size, the lamps can be obtained with phosphors added to improve the light quality.

Science News Letter, March 22, 1952

Do You Know?

More than 200 virus diseases of crops have been described as new during the past 40 years.

In ancient times honey was used for medicinal purposes.

Brazil's eucalyptus plantations, developed from trees brought in from Australia early in the century, are beginning to pay off as a source of cellulose for rayon.

Cost of waste and destruction caused by corrosion from sea water and sea air, as well as by marine organisms, runs into the billion-dollar category.

Primitive man was fortunate to have animal fat available to lubricate his crude wooden wheels.

Plastic piping installed in new minesweepers saves about two tons of copper per ship.



✿ **PLASTIC TOY car** has its inner workings clearly visible through the transparent motor block, as is shown in the photograph. Moving pistons, connecting rods, crankshaft and gears thus may be studied

by inquisitive minds. The yellow-colored body can be removed to reveal a streamlined rear chassis. Especially built to withstand Junior.

Science News Letter, March 22, 1952

✿ **"FLYING TYPEWRITER,"** a printer which can reproduce "Gone With The Wind" from magnetic tape in two hours, has been designed to print a line at a time, 80 characters to the line and to handle 300 lines a minute. It prints from coded tape or from code signals sent over wires.

Science News Letter, March 22, 1952

✿ **FAULT-FINDING INSTRUMENT** for electric companies enables trouble-shooters to determine exact location of fallen or tangled lines. The portable instrument has a built-in ohmmeter and is unaffected by stray ground currents.

Science News Letter, March 22, 1952

✿ **DRAIN CLEANER** uses a flexible rod to clear home, office or factory plumbing system of obstructions. The rod and enclosing cable are stored in a drum which also keeps the operator and floor free from dirt while the machine is in use.

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